

2004 SIP Summit



Market Strategies -- Congestion Pricing

January 14, 2004

Overview

- Governor's Action Plan highlights congestion
- Impacts of congestion
- Congestion relief and air quality
- Market strategies for traffic relief
- Congestion pricing and emissions
- Pricing examples
- Implementation issues

Impacts of Congestion

- Personal delay (loss of time)
- Loss of productivity
 - business, freight
- Increased fuel consumption
- Increased emissions
 - Increased exposure
- Driver stress

Cost of Congestion

- \$40-140 billion per year nationwide
(Texas Transportation Institute (TTI), 2003; Delucchi, 1997)
- Wasted fuel and lost productivity
 - Los Angeles \$12.8 billion
 - San Francisco \$ 3.4 billion
 - San Diego \$ 1.4 billion
 - Sacramento \$ 0.6 billion

(TTI, 2003)

Congestion Pricing: It's not just theory

- London's Congestion Charge
- Singapore's Area Pricing
- Rome's Zonal Charge
- Truck road user charges
(Switzerland, Germany, England)
- California's HOT Lanes

Congestion Relief and Air Quality

Two ways relieving congestion can reduce emissions:

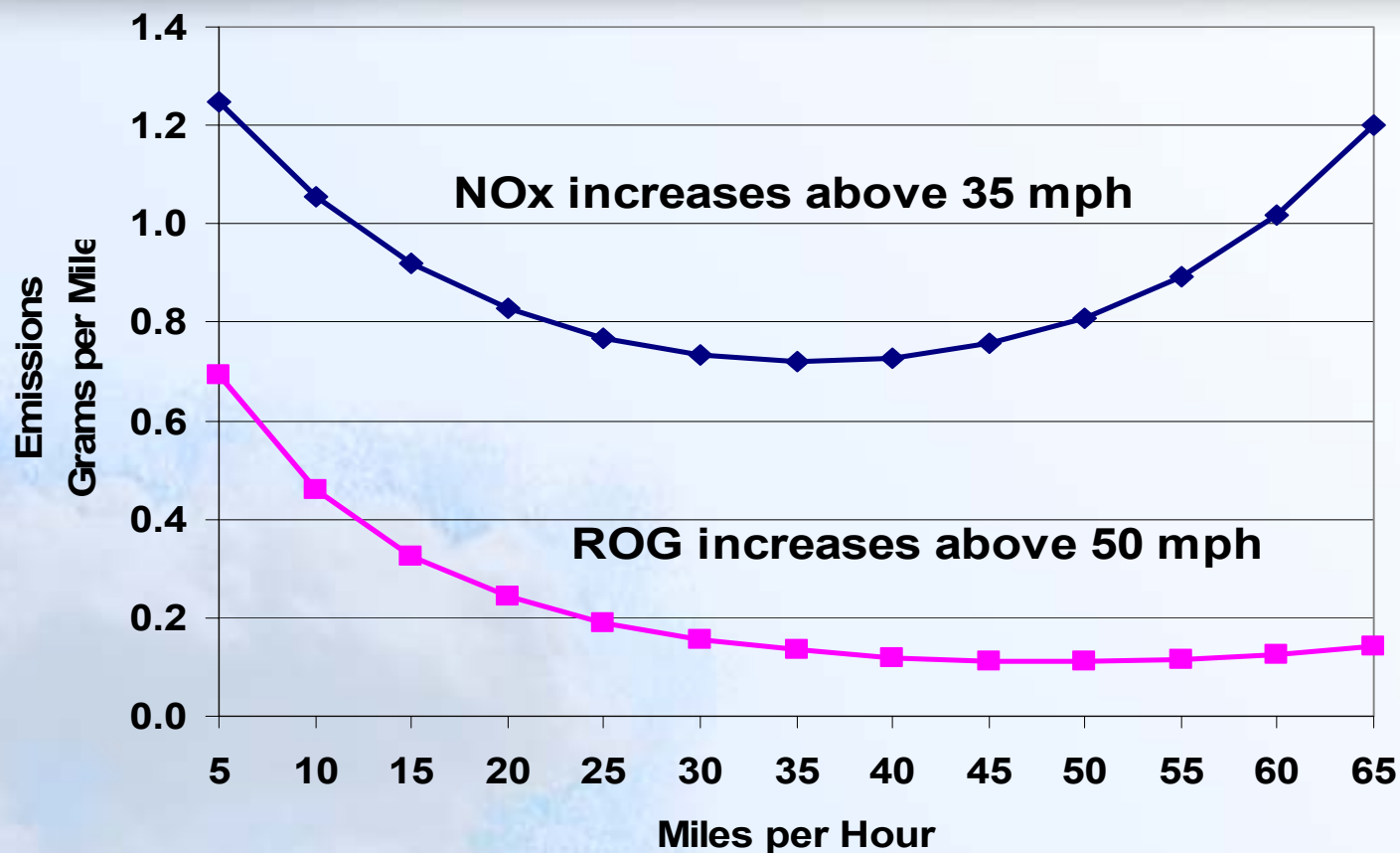
1. Reduce vehicle travel
 - Alternate mode use; trip making decisions
2. Increase average trip speeds
 - “good” speed increases

Congestion Relief and Air Quality

Two ways relieving congestion can increase emissions:

1. Increase vehicle travel
 - more solo driving; induced traffic
2. Increase average trip speeds
 - “bad” speed increases

Average Fleet Emissions by Speed 2010



Source: EMFAC2002, Version 2.2, year 2010, annual average, average fleet. ROG includes running exhaust plus running evaporatives.

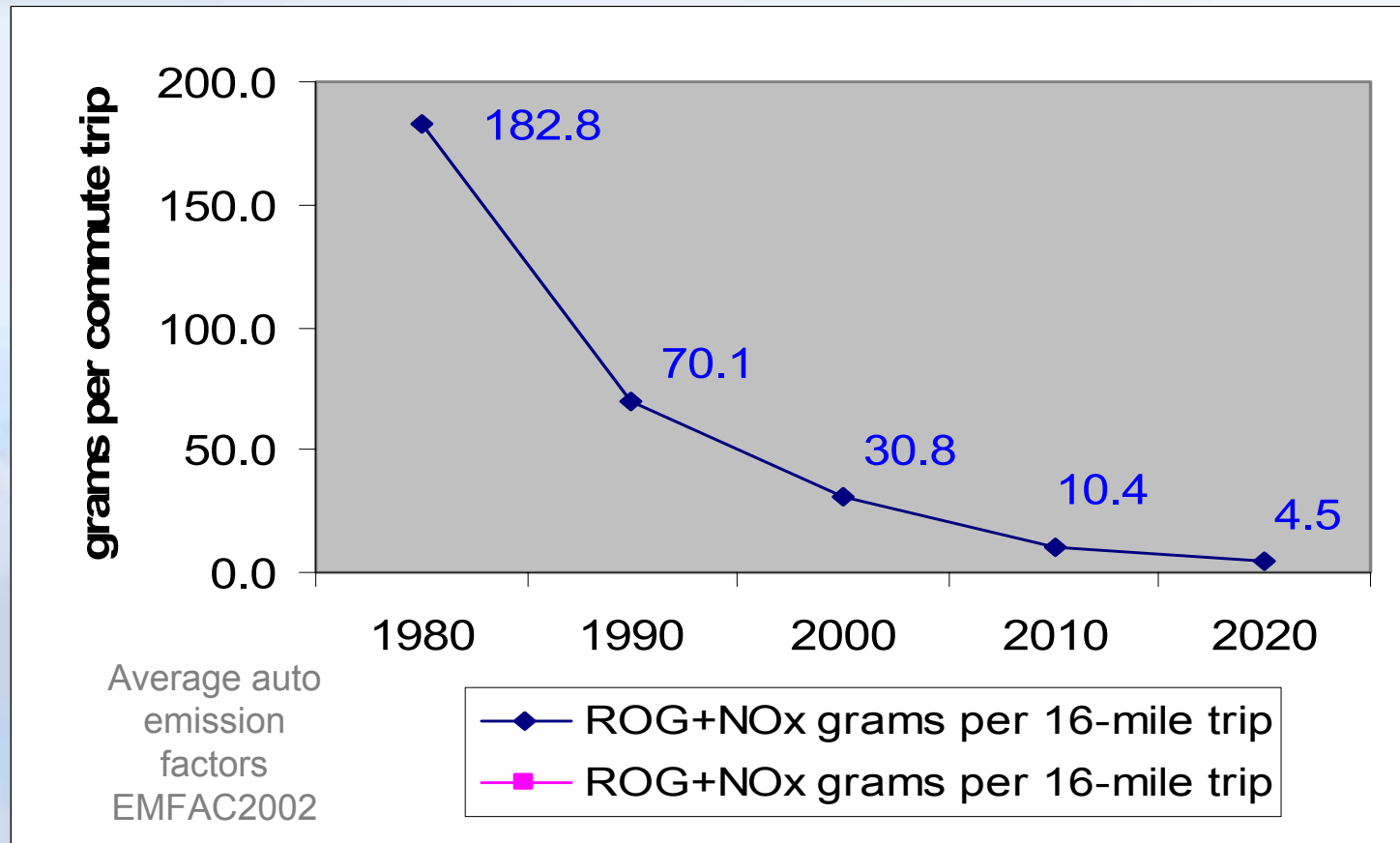
Reduced Vehicle Travel

Eliminated trip = Reduced emissions

16-mile trip in 2010 = 10.4 grams of
ROG+NO_x*

* Source: Average light-duty (passenger cars and trucks) emissions factors, EMFAC2002v2.2, calendar year 2010.

The Cleaning of the Fleet



What is a market-based strategy?

- Markets match supply with demand
 - Airlines / Public Utilities
 - Restaurants / Hotels / Theaters
- Use a price signal; increase consumer choice.

Cal/EPA's Market-Based Commute Strategy

Pay market rate for parking
+
transportation choices
(light rail, bus, transit benefit,
rideshare and bicycle support)
=
31% drive-alone rate
(ave. metro drive alone rate is ~70%)

Market-Based Traffic Relief

Example: Dynamic toll bridge pricing

- Decrease vehicle travel
 - Due to increased carpooling and transit, and trip-making decisions
- “Good” speed increase
 - Price signal has a more positive impact if congestion is severe

Non-Market-Based Traffic Relief

Example: Add mixed-flow freeway lanes

- Increase traffic
 - “Induced” traffic (Hansen, 1997; Noland, 2001)
- “Bad” speed increases
- Not as sustainable

Technology

- Traffic signal coordination
- Freeway incident management
- Entrance ramp meters

Innovative Mobility*

- Improve transportation options while reducing negative impacts:
 - ✦ Info technology (personalized travel info, route assistance, bus times, etc.)
 - ✦ ITS / Innovative Corridors
 - ✦ Carsharing
 - ✦ Smart parking
 - ✦ Land use strategies -- Smart growth

* UC Davis, California
Center for Innovative Transp.

Trip Predictability

- Pricing and technology can increase trip predictability
- More important to travelers than average trip time
- “Manage” congestion more efficiently

Congestion Pricing Impacts

- There is a nexus between congestion pricing and reduced emissions, but...
- The price signal must be significant to get a significant impact
- The pricing must be regional to have a regional impact

Corridor level impact

- Bay Bridge Congestion Pricing Task Force
 - Looked at peak hour tolls \$2-5
 - \$4 toll: Eliminate most of the congestion on bridge corridor
 - Impact on emissions relatively small (fraction of a ton/day)

Regional Impact

Strategy	VMT	Delay	Fuel Use	ROG	NOx
Regional Congestion Pricing So. Coast 2010	-3.3%	-32.0%	-9.6%	-8.1%	-3.6%

* Harvey, 1996

- ~75% of 300 “corridors” with significant delay
- Freeways, plus arterials and collector streets
- Electronically priced to reduce congestion

London Congestion Charge



Transport for London

- 16 percent fewer vehicles driven within downtown zone
- 30 percent reduction in Central London congestion
- \$60-100 million per year revenue
- Travel behavior analysis, but no regional VMT/emissions estimate



**Congestion
charging...**

Singapore / Rome

- Singapore
 - Core area pricing since 1975
 - Initial 40% reduction, still 20-25%
- Rome
 - Zonal charge in 1994
 - 20% congestion reduction

California's HOT Lanes

(High-occupancy toll lanes)

- SR-91 in L.A. and I-15 in San Diego
- Allow single-occupancy vehicles on HOV lanes for a fee
- Dynamic pricing -- price changes according to congestion
- Electronic tolling (transponders)
- Manages/increases road capacity

User-Based Truck Pricing In Europe

- Switzerland, Germany, England
- Mileage-based user fees
- Revenue to help maintain roads
- On-board wireless units used for calculating road charges
- Increased efficiency - forecast of 10% reduction in truck VMT

Implementation of Congestion Pricing

- Authorizing state and federal legislation would be needed
- Federal law: no toll unless specific authority given
 - HOT lanes through 1991 ISTEA and California legislation
- Federal, state, local coordination

Ten Guidelines for Success

- 1. Recruit an influential champion**
- 2. Keep stakeholders informed**
- 3. Secure cooperation from third-party authorities**
- 4. Make it part of an integrated strategy**
- 5. Counter the “just another tax” charge**
- 6. Pick the right scale and place**
- 7. Use proven technologies**
- 8. Don’t neglect the boring stuff**
- 9. Ensure a successful debut - plan contingencies**
- 10. Maintain flexibility**

Source: Deloitte Research-Public Sector, 2003

Summary

- There is a nexus between congestion relief and air quality
- Market-based congestion strategies can provide an air quality benefit but congestion relief is primary goal